

CLAIMS

What is claimed is:

1. A color image forming apparatus comprising:
a photoreceptor medium;
an exposing unit that scans light onto the photoreceptor drum to form a latent electrostatic image;
a plurality of developer units that include developer rollers supplying toner to the latent electrostatic image to develop the latent electrostatic image into a toner image, each developer unit including toner of a different color, and the developer units being arranged around the photoreceptor medium so that the developer rollers are separated by a development gap from the photoreceptor medium; and
a power supply that selectively applies a first bias allowing toner to be supplied through the development gap to the photoreceptor medium on which the latent electrostatic image is formed and a second bias preventing toner from passing through the development gap.
2. The color image forming apparatus of claim 1, wherein the toner is of a nonmagnetic-one-component-type.
3. The color image forming apparatus of claim 2, wherein the development gap is within a range of 50 – 400 μm .
4. The color image forming apparatus of claim 2, wherein only one of the developer rollers of the plurality of developer units to which the first bias is applied rotates.
5. The color image forming apparatus of claim 2, wherein the second bias is determined in consideration of a first contamination level where toner in the developer units of the plurality of the developer units that are not selected during a process of forming a multi-color image sticks to the latent electrostatic image formed on the photoreceptor medium and a second contamination level where toner adhered to the latent electrostatic image on the photoreceptor medium by the developer roller of the selected developer unit sticks to the developer rollers of the unselected developer units, so that an optical density corresponding to

the first contamination level and an optical density corresponding to the second contamination level are equal to or smaller than 0.03.

6. The color image forming apparatus of claim 2, wherein the second bias electrically floats.

7. The color image forming apparatus of claim 2, wherein the second bias is selected between -600V and +50V.

8. A method of forming a multi-color image, the method comprising:
arranging a plurality of developer units including toner of different colors and developer rollers so that the developer rollers are separated by a development gap from the photoreceptor medium;

scanning light corresponding to an image of selected color onto the surface of a photoreceptor medium that is charged to form a latent electrostatic image;

applying a first bias to a developer roller of one of a plurality of developer units containing toner of a selected color so that toner of the selected color is fed to the latent electrostatic image via the development gap;

applying a second bias to developer rollers of developer units of the unselected developer units to prevent toner from moving through the development gap; and

transferring the toner image formed on the photoreceptor medium to a transfer medium, wherein the above operations are repeated for toner of different colors to form a multi-color toner image on the transfer medium, transfer the multi-color toner image to a sheet of paper, fix and fuse the multi-color toner image to the sheet of paper, and form a multi-color image.

9. The method of claim 8, wherein the toner is of a nonmagnetic-one-component-type.

10. The method of claim 9, wherein the development gap is within a range of 50 – 400 μm .

11. The method of claim 9, wherein only one of the developer rollers of the plurality of developer units to which the first bias is applied rotates.

12. The method of claim 9, wherein the second bias is determined in consideration of a first contamination level where toner in the developer units of the plurality of the developer units that are not selected during a process of forming a multi-color image sticks to the latent electrostatic image formed on the photoreceptor medium and a second contamination level where toner adhered to the latent electrostatic image on the photoreceptor medium by the developer roller of the selected developer unit sticks to the developer rollers of the unselected developer units, so that an optical density corresponding to the first contamination level and an optical density corresponding to the second contamination level are equal to or smaller than 0.03.

13. The method of claim 9, wherein the second bias electrically floats.

14. The method of claim 9, wherein the second bias is selected between -600V and +50V.

15. An image forming apparatus, comprising:
a photoreceptor medium to form an image thereon to be transferred to a recording medium; and
a plurality of developing units each including a developing roller to transfer developer to the photoreceptor medium to form the image thereon,
wherein the image is formed on the photoreceptor medium with developer without rotation or sliding of any of the plurality of developing units.

16. The image forming apparatus of claim 15, further comprising a laser scanning unit to scan the surface of the photoreceptor medium to expose a portion thereof in which developer is to be transferred from one of the plurality of developing units.

17. The image forming apparatus of claim 15, wherein each developing unit comprises:

a first potential which is applied to a respective developing unit roller to transfer developer to the photosensitive medium; and

a second potential which is applied to a respective developing unit roller to prevent developer from being transferred to the photosensitive medium.

18. A method of forming an image comprising:

arranging a plurality of developer units having a respective developer roller a predetermined distance from a photoreceptor medium;

charging the photoreceptor medium to form an electrostatic image thereon;

applying a first bias to one of the plurality of developer rollers containing toner of a selected color so that the toner is fed to the latent electrostatic image via the predetermined distance;

applying a second bias to the other developer rollers to prevent toner from moving through the predetermined distance; and

repeating the above operations for each of the developer rollers to form a multi-color image on the photoreceptor medium.

19. The image forming apparatus of claim 15, wherein each developing unit comprises:

a first potential which is applied to a respective developing unit roller to transfer developer to the photosensitive medium; and

a second potential which is applied to a respective developing unit roller to prevent developer from being transferred to the photosensitive medium.